

Listing of Claims

1 Claims 1 - 20 (Canceled)

1 Claim 21 (Currently Amended): A system on a sheet making machine for controlling
2 one or more properties of a sheet of material after completing forming said sheet using said
3 material, said system ~~to be manufactured on a sheet-making machine~~ comprising:

4 a plurality of actuators distributed in the cross-machine direction at respective fixed
5 positions over said sheet of material, each actuator being operable to perform a first control
6 action with a magnitude on a slice of said sheet of material, the actuator also being operable
7 to perform a second control action to manipulate a cross-directional shape within said slice,
8 each of said plurality of actuators being controllable to vary the properties of said sheet of
9 material by varying both said magnitude and said cross-directional shape within said slice;

10 scanners distributed over said sheet of material to measure properties data about the
11 properties of said sheet of material; and

12 a controller in communication with said scanners for calculating said first control
13 action and said second control action for each of said plurality of actuators, and implementing
14 said first control action and said second control action at each of said plurality of actuators
15 such that said actuators co-operate to adjust the properties of said sheet of material to desired
16 targets.

1 Claim 22 (Previously Presented): The system of claim 21 in which each of said
2 plurality of actuators comprises a steam actuator having an outlet chamber for releasing steam
3 to said sheet of material with the cross-direction position and dimensions of each outlet
4 chamber being manipulatable to control said cross-directional shape within said slice.

1 Claim 23 (Previously Presented): The system of claim 22 in which said outlet chamber
2 of said steam actuator includes at least one movable baffle plate which is movable to control
3 said cross-direction position and dimensions of said outlet chamber.

1 Claim 24 (Previously Presented): The system of claim 21 in which each of said
2 plurality of actuators comprises a steam actuator having an outlet chamber for releasing steam
3 to said sheet of material and including a screen plate with openings there through covering

4 the outlet chamber and at least one movable plate, such that moving the at least one movable
5 plate with respect to the screen plate acts to fully or partially obstruct openings in the screen
6 plate.

1 Claim 25 (Previously Presented): The system of claim 21 in which each of said
2 plurality of actuators comprises a steam actuator having an outlet chamber for releasing a
3 flow of steam to said sheet of material including at least one air jet associated with said outlet
4 chamber dischargable to control the shape of the steam flow.

1 Claim 26 (Withdrawn): The system of claim 21 in which each actuator comprises a
2 nozzle for delivering a water spray atomized by air pressure to the sheet of material including
3 means for adjusting the air pressure at the nozzle to control the shape of the water spray.

1 Claim 27 (Withdrawn): The system of claim 21 in which each actuator comprises a
2 nozzle for delivering a water spray atomized by air pressure to the sheet of material including
3 means for adjusting the air flow at the nozzle to control the shape of the water spray.

1 Claim 28 (Withdrawn and Previously Presented): The system of claim 21 in which
2 each actuator comprises a nozzle for delivering a water spray atomized by air pressure to the
3 sheet of material, the nozzle having a water discharge opening and an air discharge opening
4 that are adjustable by position with respect to each other to control the shape of the water
5 spray.

1 Claim 29 (Withdrawn): The system of claim 21 in which each actuator comprises an
2 induction heating coil for heating at least one of a pair of rolls to change the diameter of the
3 at least one roll in order to vary the gap between the pair of rolls and thereby the thickness
4 of a sheet of material passing between the rolls with each coil having multiple windings for
5 generating magnetic fields whereby controlling the currents to each of the multiple windings
6 controls the cross-direction shape of the actuator response.

1 Claim 30 (Withdrawn): The system of claim 21 in which each actuator comprises an
2 induction heating coil for heating at least one of a pair of rolls to change the diameter of the
3 at least one roll in order to vary the gap between the pair of rolls and thereby the thickness
4 of a sheet of material passing between the rolls, each heating coil being mounted for
5 pivotable movement whereby adjusting the angle of the heating coil controls the
6 cross-direction shape of the actuator response.

1 Claim 31 (Withdrawn): The system of claim 21 in which each actuator comprises an
2 array of infrared heating lamps for heating the sheet of material whereby controlling the
3 voltage of each heating lamp controls the cross-direction shape of the actuator response.

1 Claim 32 (Withdrawn): The system of claim 21 in which each actuator comprises a
2 gas-fired infrared emitter matrix for generating infrared radiation to heat the sheet of material,
3 the emitter matrix being heated by combusting gas and having screen plates with openings
4 there through adjacent the emitter matrix, whereby moving the screen plates with respect to
5 each other to fully or partially align or misalign openings in the screen plates acts to vary the
6 gas supply to the emitter matrix to control the cross-direction shape of the actuator response.

1 Claim 33 (Canceled)

1 Claim 34 (Previously Presented): The system of claim 21, wherein each of said
2 plurality of actuators is operable individually to perform said first control action and said
3 second control action.

1 Claim 35 (Previously Presented): The system of claim 21, wherein each of said
2 plurality of actuators is controllable to vary the properties of said sheet of material by
3 simultaneously varying both said magnitude and said cross-directional shape within said
4 slice, and wherein said controller implements said first control action and said second control
5 action simultaneously at each of said plurality of actuators such that said actuators co-operate
6 to adjust the properties of said sheet of material to desired targets.

1 Claim 36 (New): A system on a sheet making machine for controlling one or more
2 properties of a sheet of material after completing forming said sheet using said material, said
3 system comprising:

4 a plurality of steam actuators distributed in the cross-machine direction over said sheet
5 of material, each steam actuator having an outlet chamber for releasing steam,

6 said outlet chamber being formed by a space between a first plate, a second plate and
7 an outer wall, wherein said first plate is designed to contain a nozzle through which steam
8 is received, and said second plate contains a plurality of openings to allow passage of steam
9 received from said nozzle onto said sheet of material,

10 said outlet chamber being operable to release steam of a magnitude and also to
11 manipulate a cross-directional shape within said slice, each outlet chamber being controllable
12 to release steam to vary both said magnitude and said cross-directional shape within said
13 slice;

14 scanners distributed over said sheet of material to measure properties data about the
15 properties of said sheet of material; and

16 a controller in communication with said scanners for calculating said magnitude and
17 said cross-directional shape for each of said plurality of steam actuators, and causing each
18 of said outlet chambers to release steam with corresponding magnitude and cross directional
19 shape such that said plurality of steam actuators co-operate to adjust the properties of said
20 sheet of material to desired targets.

1 Claim 37 (New): The system of claim 36 in which said outlet chamber of each of said
2 steam actuator includes at least one movable baffle plate which is movable to control
3 dimensions of said outlet chamber, which in turn causes release of steam with a
4 corresponding cross directional shape.

1 Claim 38 (New): The system of claim 36 in which each of said outlet chambers
2 includes at least one movable plate, such that moving the at least one movable plate with
3 respect to the second plate acts to fully or partially obstruct said plurality of openings in the
4 second plate, thereby causing release of steam with a corresponding cross directional shape.

1 Claim 39 (New): The system of claim 36 in which each of said outlet chambers
2 includes at least one air jet associated with said outlet chamber dischargable to control the
3 shape of the steam flow.